



Dynamics of tick-borne disease systems: Minor role of recent climate change

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Abstract:

Tick-borne disease systems are very sensitive to climate through the impact of temperature and moisture stress on rates of the demographic processes of ticks. There is no a priori reason, however, to expect tick abundance or seasonal activity patterns to respond to climate change in ways that inevitably increase the risk of infection by the transmitted pathogens. Changing host availability may be more important than climate in determining tick abundance. The credibility of any (inherently untestable) predictions of future system-specific changes will be strengthened if based on satisfactory explanations of the past. Tick-borne encephalitis (TBE) in Europe is presented as a case study: observed patterns of climate change are too similar within and between countries to provide the sole explanation for the extreme spatio-temporal heterogeneity of the marked upsurges in TBE incidence over the past two decades. Instead, a nexus of interacting factors affecting both the risk of infection and exposure of humans to that risk, and each differing in force in space and time, is a more powerful model. Many of these factors are driven by socio-economic changes, and include climate, land cover, wildlife, agricultural practices, industrial activities, (un)employment and income. The same principle may apply to the periodic epidemics of Crimean-Congo haemorrhagic fever.

Source: [http://web.oie.int/boutique/index.php?page=Euro Surveillance \(Bulletin European Sur Les Maladies Transmissibles; European Communicable Disease Bulletin\)ficprod&id_prec=Euro Surveillance \(Bulletin European Sur Les Maladies Transmissibles; European Communicable Disease Bulletin\)115&id_produit=Euro Surveillance \(Bulletin European Sur Les Maladies Transmissibles; European Communicable Disease Bulletin\)692&lang=Euro Surveillance \(Bulletin European Sur Les Maladies Transmissibles; European Communicable Disease Bulletin\)en&fichrech=Euro Surveillance \(Bulletin European Sur Les Maladies Transmissibles; European Communicable Disease Bulletin\)1&PHPSESSID=Euro Surveillance \(Bulletin European Sur Les Maladies Transmissibles; European Communicable Disease Bulletin\)6bb334f9e08994fe55ba3a6cd34c935b](http://web.oie.int/boutique/index.php?page=Euro Surveillance (Bulletin European Sur Les Maladies Transmissibles; European Communicable Disease Bulletin)ficprod&id_prec=Euro Surveillance (Bulletin European Sur Les Maladies Transmissibles; European Communicable Disease Bulletin)115&id_produit=Euro Surveillance (Bulletin European Sur Les Maladies Transmissibles; European Communicable Disease Bulletin)692&lang=Euro Surveillance (Bulletin European Sur Les Maladies Transmissibles; European Communicable Disease Bulletin)en&fichrech=Euro Surveillance (Bulletin European Sur Les Maladies Transmissibles; European Communicable Disease Bulletin)1&PHPSESSID=Euro Surveillance (Bulletin European Sur Les Maladies Transmissibles; European Communicable Disease Bulletin)6bb334f9e08994fe55ba3a6cd34c935b)

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Ecosystem Changes, Meteorological Factors, Precipitation, Temperature

Temperature: Fluctuations

Geographic Feature:



resource focuses on specific type of geography

None or Unspecified

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Europe

European Region/Country: European Region

Other European Region: central; eastern

Health Impact:

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Vectorborne Disease

Vectorborne Disease: Tick-borne Disease

Tick-borne Disease: Crimean-Congo Haemorrhagic Fever, Tick-borne Encephalitis

Intervention:

strategy to prepare for or reduce the impact of climate change on health

A focus of content

Model/Methodology:

type of model used or methodology development is a focus of resource

Methodology

Resource Type:

format or standard characteristic of resource

Research Article, Review

Timescale:

time period studied

Historical

Vulnerability/Impact Assessment:

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content